Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 14-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Blum et al ('988). Blum et al teach a coating composition containing a polyurethane resin and a method for its production comprising the first reaction product of a) polyether polyol and isophorone diisocyanate, which is then reacted with b) low molecular weight diamine, and finally c) chain terminating agent. (Abstract; col 1 lines 17-23; col 6 lines 1-4, 61-65; claim 14). Component a) consists of polytetrahydrofuran having a molecular weight between 900 and 2,500 g/mol, and component b) consists of isophorone diamine (Col 4 lines 1-4; col 5 lines 37-40). Patentees go on to teach the polyurethane can be applied to plastic substrates and are useful in ink printing laminates (Col 7 lines 7-9, 21-32).

2. Regarding applicants' claimed step of including butanediol after the reaction of isophorone diamine, the examiner would like to point out that column 6 lines 19-22 teaches that butanediol can be added after the reaction with component b) and prior to chain-termination. Concerning the claimed NCO:NCO-reactive group ratio, patentees teach component c) is present relative to the remaining free NCO groups in a 1:1 ratio, thereby satisfying applicants' claimed range (Col 6 line 1). Furthermore, the examiner would like to point out the goal of Blum et al is to produce a polyurethane resin having no free NCO groups, this should not constitute a reading that isocyanate-reactive groups are required to be present (Col 6 lines 23-26).

3. Claims 14-20 and 22, 24-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Eisele et al (EP 1 229 090). Eisele et al teach a coating composition, useful in ink printing laminates, that contains a polyurethane resin and a method for its production comprising the reaction product of a) polyether polyol, b) low molecular weight diol, c) low molecular weight diamine, and optionally d) chain terminating agent, wherein the ratio of isocyanate to isocyanate-reactive groups is at least 1:1, and the resulting polyurethane resin has a weight average molecular weight that overlaps applicants' claimed range, and may be in the presence of solvent (Abstract; paragraphs 1, 11, 15, 18, and 37).

4. In particular, patentees teach that the a) polyether polyol is present relative to the diisocyanate in a NCO:OH ratio ranging from 2.3:1 to 1:1, and has a molecular weight as low as 1,500 g/mol (Paragraphs 12 and 14). Components b) and c) consists of butanediol and isophorone diamine, respectively (Paragraphs 29 and 33). Finally, patentees explain that the polyurethane can be applied to plastic substrates by flexography, then laminated with an adhesive, and finally covered with a top layer forming a laminate (Paragraphs 1 and 48). Finally, while the examiner notes that Eisele et al do not explicitly teach the applicants' claimed order of addition for each reactant, the examiner maintains the polyurethane resin of claims 14-20, 22 is still anticipated by the prior art because it does not appear to be patentably distinct from that disclosed by Eisele et al.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blum et al ('988) in view of Eisele et al (EP 1 229 090). Aforementioned, Blum et al teach a polyurethane coating composition and a method for its production comprising the reaction product of polyether polyol, butanediol, isophorone diamine, and optionally mono-functional chain stopper. In particular, Blum et al disclose that the polyurethane is applied to plastic substrates by flexography, followed by drying said urethane thereby removing the solvent, wherein the polyurethane is useful in printing ink laminates, however patentees fail in teaching method steps that correspond to claim 24.

7. As previously discussed, Eisele et al also teach a polyurethane coating composition based on the reaction product of polyether polyol, butanediol, isophorone diamine, and optionally chain terminating compounds, wherein the isocyanate and isocyanate-reactive species are present in amounts that result in at least a 1:1 equivalent ratio and a polyurethane molecular weight between 20,000 and 80,000. Eisele et al go on to teach a useful method of creating a laminate by

applying the polyurethane ink composition to a plastic substrate, followed by application of an adhesive on the dried polyurethane layer, and finally top the adhesive with a covering layer.

8. Based on the disclosure of Eisele et al, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the claimed method steps in Blum et al in order to create a printed ink laminate based on the fact that both Eisele et al and Blum et al have analogous compositions, are drawn to similar applications, and one would reasonably expect to utilize the method of Eisele et al for the compositions of Blum et al.

9. Claims 14-22, and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eisele et al (EP 1 229 090) in view of Blum et al ('988). Aforementioned, Eisele et al teach coatings based on polyurethane resin that is the reaction product of polyether polyol, butanediol, isophorone diamine, and chain terminating compounds. Patentees fail, however, to specify the same order of addition as claimed by applicants in claims 14 and 22.

10. As previously discussed, Blum et al also teach coatings based on polyurethane resin that is the reaction product of polyether polyol, butanediol, isophorone diamine, and chain terminating compounds, and in particular patentees explain additional butanediol can be added *after* the diamine in order to obtain the desired viscosity of the polyurethane resin (Col 6 lines 19-22). Therefore, it would have also been obvious to include the relied upon step in Eisele et al since both Eisele et al and Blum et al are drawn to analogous polyurethane resins having similar applications, and Blum et al teach it as a useful way to control the viscosity of the resulting composition.

11. Claims 14-22, and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Narayan et al (WO 01/14442) in view of Blum et al ('988). Narayan et al teach a coating

composition, useful in ink printing laminates, that contains a polyurethane resin and a method for its production comprising the reaction product of isophorone diisocyanate and a) polytetramethylene ether glycol, which is chemically synonymous with polytetrahydrofuran, b) isophorone diamine, and optionally c) chain-terminating agent, wherein the ratio of isocyanate to isocyanate-reactive groups may be greater than 1:1 (Abstract; page 2 lines 10-26; page 3 lines 1-4; page 4 lines 27-28, page 5 lines 5-7; page 7 lines 11-15; page 8 lines 6, 12-20; page 9 lines 14-18). While patentees teach the reaction between the diisocyanate and component a) first, followed by the reaction with component c), there is no teaching to further react the butanediol prior to the reaction with component c).

12. As previously discussed, Blum et al also teach coatings based on polyurethane resin that is the reaction product of polyether polyol, butanediol, isophorone diamine, and chain terminating compounds, and in particular patentees explain additional butanediol can be added *after* the diamine in order to obtain the desired viscosity of the polyurethane resin (Col 6 lines 19-22). Therefore, it would have also been obvious to include the relied upon step in Narayan et al since both Narayan et al and Blum et al are drawn to analogous polyurethane resins having similar applications, and Blum et al teach it as a useful way to control the viscosity of the resulting composition.

Terminal Disclaimer

13. The terminal disclaimer filed on 5/2/2008 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of application 10/560,607 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Note

14. Due to an inadvertent oversight in the non-final office action mailed 11/9/2007, claims 24 and 25 were never officially presented as being anticipated by Eisele et al. However, the examiner would like to point out that the claimed subject material was clearly addressed in the previous office action on paragraph 13.

Response to Arguments

15. Applicant's arguments, filed 8/13/2008, with respect to the rejection of:

I. Claims 14-22 as being anticipated by Arcurio et al (WO 02/38643)

II. Claim 21 as being anticipated by Eisele et al

16. Have been fully considered and are persuasive. The rejection has been withdrawn.

17. Applicant's arguments, filed 8/13/2008, with respect to the rejection of

III. Claims 14-22 as being anticipated by Blum et al, and

IV. Claims 14-20 and 22, 24-25 as being anticipated by Eisele et al

V. Claims 24 and 25 as being unpatentable over Blum et al in view of Eisele et al

18. Have been fully considered but are not persuasive.

19. Regarding issue **III**, applicants state that Blum et al does not anticipate the claimed invention since Blum et al requires an excess of amine-functional chain-terminating compound, "preferably in an amount of 1.15 equivalents and more preferably in an amount of 1.3 equivalents per equivalent of isocyanate groups." Therefore, the presence of the excess amine does not satisfy the claimed "1:1 or greater" limitation. While it is noted that Blum et al allow for excess amine, applicants have appeared to overlook the statement of Blum et al, which states that said chain-terminating is present by "at least 1 equivalent," i.e. Blum allows for a 1:1 ratio and therefore at this level, no excess amine is present.

20. Regarding the claimed addition of isophorone diamine and butanediol, the examiner redirects applciants' attention to paragraph 2 of the instant rejection. Applicants' also argue the Blum et al reference because aromatic diisocyanates are preferred. This position is based on an isolated disclosure which states that in *one preferred embodiment*, aromatic diisocyanates can be used. However upon a proper and full reading of Blum et al, one of ordinary skill would understand that Blum et al clearly also teaches preference for isophorone diisocyanates: "The exclusive use of aliphatic and/or cycloaliphatic diisocyanate.... More preferably at least 75 wt% of component (b) is selected from isophorone diisocyanate" (Col 4 lines 47-55).

21. Regarding issue **IV**, patentees argue polyurethane of Eisele et al does not anticipate the claimed composition since it requires the presence of a polyol having a molecular weight of at least 10,000, which the currently claimed invention does not require. While this may be true, the currently claimed invention does **not exclude** the presence of such polyol, and therefore the examiner maintains Eisele et al anticipates the claimed invention.

22. Finally, applicants' remarks concerning issue **V** are some what ambiguous. There is a mention of nitrocellulose carrier, however the claims are not limited to such composition and therefore these remarks are not commensurate in scope with the present claims.

Conclusion

23. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

24. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin J. Gillespie whose telephone number is 571-272-2472. The examiner can normally be reached on 8am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

26. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rabon Sergent/
Primary Examiner, Art Unit 1796

B. Gillespie